

DOCUMENT RESUME

ED 383 194

CS 210 628

AUTHOR Beckel, David

TITLE Francis Bacon's New Science: Rhetoric and the Transformative Power of Print.

PUB DATE Mar 87

NOTE 12p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (38th, Atlanta, GA, March 19-21, 1987).

PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *Intellectual History; Literacy; Philosophy; *Printing; *Rhetoric; *Scientific Concepts; Technological Advancement; Written Language

IDENTIFIERS *Bacon (Francis); Empiricism; *Rhetorical Theory; Seventeenth Century; Text Factors; Text Structure

ABSTRACT

The process of projecting textual models onto the phenomenal world began with the invention of writing and accelerated through the manuscript culture of classical antiquity and the Middle Ages into the age of print. In Francis Bacon's work, the book (a metaphor for the phenomenal world) adapted to the demands of the printed text and reflects the impact of this text on poetic structures. When Bacon begins to perceive nature as a text that can be studied, analyzed, manipulated, and finally collected as a sort of databank with secrets to be unlocked, the medieval notion of the book as God's creation is transformed. The combination of typography and rhetoric paves the way for the objectification of nature and the birth of what Bacon calls the new sciences. The literate person sees truth in the stability and certainty of the written word, while the rhetorical person sees knowledge as social, and therefore, problematic. Recent research on Bacon illuminates his attempts to further that combination of rhetoric and textuality called science in a print-dominated culture. Bacon's translation of rhetorical arts into experimental arts is a point of mediation between the socially defined world of the orator and the textually defined world of the scientist. In Bacon's works, the residual orality of the Middle Ages collides with the print literacy that was an enabling force behind the scientific revolution, and might well serve as the starting point for the study of a third sophistic that begins with the invention of the electronic media. (References are appended.) (NHA)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

ED0283194

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to improve
reproduction quality.

Points of view or opinions stated in this
document do not necessarily represent official
EDRS position or policy.

Francis Bacon's New Science: Rhetoric and
the Transformative Power of Print

David Heckel

PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

David Heckel

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC).

CS 210638

Francis Bacon's New Science: Rhetoric and
the Transformative Power of Print

A presentation prepared for the 1987
Conference on College Composition and Communication

David Heckel
Georgia Southern College

George Kennedy describes as letteraturizzazione "the tendency of rhetoric to shift its focus from persuasion to narration, from civic to personal contexts, and from discourse to literature, including poetry" (5). There is a second tendency which is analogous to or is perhaps another type of letteraturizzazione, and this is the tendency of rhetoric to shift its focus from the aural-oral world of primary rhetoric to the schematized world of the printed text and by extension onto the "text" of the phenomenal world.

The nature of the impact of writing on human consciousness has been widely noted and studied in works by Walter Ong, Eric Havelock and many others. The impact of print literacy has also been examined by scholars in many fields, among them Chaytor, Ong, and Eisenstien. It has been generally noted that shifts in communication technologies are accompanied by shifts in human consciousness, with a general shift towards increased self-consciousness as literacy has extended its range. One consequence of this shift that can be seen toward the end of the Renaissance involves a projection of dialectical and rhetorical models of discovery onto the phenomenal world. This process of projecting textual models onto the phenomenal world gradually transformed many of the practices of traditional rhetoric into what has come

to be known as the scientific revolution. I hope to suggest that, when viewed from the vantage of the history of rhetoric, the scientific revolution does not appear to be as revolutionary as it has seemed. The scientific revolution is itself involved in a rich collision between the lively rhetorical world of the Renaissance Humanists and the new technology of printing.

The textualization of the phenomenal world began with the invention of writing and accelerated through the manuscript culture of classical antiquity and the middle ages into the age of print. Throughout this development, the book served as a conscious and unconscious metaphor for the phenomenal world. In the work of Francis Bacon and other empiricists, the qualities of this metaphor adapted to the new demands of the printed text and reflect the impact of the printed text on noetic structures. In many ways the modern concept of structure is itself a product of this textualization of human consciousness. Structural movements, beginning with Peter Ramus' revisions of rhetorical theory, have always been mediated through the visual medium of graphics in charts, indexes and other types of graphic representation. Indeed, as Goody, Havelock and others have noted, lists are among the first forms of written record. The structural ordering of items into dichotomous lists informs the Ramist revolution in rhetoric as well as the scientific revolution and its attempts to reorganize old and to discover new knowledge. The dichotomizing nature of human thought, beginning with the Greeks, has its basis in alphabetic literacy, which, as Havelock has shown in his

Preface to Plato and elsewhere, played a role in the separation of the knower from the known as literacy spread throughout the Greek world.

Expectations for the power of typographic literacy as an intellectual tool also inform the seventeenth-century rejection of rhetoric. The stabilized, fixed, and exactly reproducible word encouraged the separation of dialectic from rhetoric, especially in its Ramist form, and left rhetoric with only the practices of ornamentation and delivery. Bacon seems to share this view in his famous description of the "duty and office of rhetoric" as the application of "Reason to Imagination for the better moving of the will." Rhetoric furthermore, according to Bacon, is useful in the transmission of knowledge, but not in the discovery of new knowledge, and this is the key to Bacon's critique of earlier systems of both logic and rhetoric, that they do not lead to true discovery, but only to the repetition of old knowledge.

Print also encouraged the notion of the finitude of knowledge that informed Bacon's scientific project and the optimism of the later scientific projects of the Enlightenment. This enthusiasm is noticeable in Bacon's belief that "no course of invention can be satisfactory unless it be carried on in writing." And furthermore in his sense that "when this is brought into use, and experience has been taught to read and write, better things may be hoped." These metaphors of literacy, reading and writing, and the printed book as models for the scientific project are revealing. Knowledge, Bacon seems to think, is

collectable and finite, not continuous and problematic, as it was, it seems, for the early Greek sophists (cf. Kerferd "Sophistic relativism") and has become for modern physicists and deconstructionists, among others.

From the vantage of recent orality literacy studies, we might also venture to say that the notions of knowledge as finite and collectable are literate notions, informed by an association of knowledge with writing and the printed book, the major means for the transmission of it after the invention of the printing press and prior to the invention of the various electronic media. As Bacon remarks in De augmentis, "For as the principle part of transmission of knowledge consists in the writing of books, so the relative part thereof turns on the reading of books." It is not a radical transference to move from the book as a model for the transmission of knowledge to the book as a model for the collection and discovery of new knowledge. This is a transference that Bacon makes when he begins to perceive nature as a text that can be studied, analyzed, manipulated and finally collected as a set of histories that will serve as a sort of databank out of which will develop the axioms that will unlock the secrets of nature. In other words, Bacon brings the expectations of a print literate to the metaphor of the book he employs and radically transforms the medieval notion of the book of God's creation along these lines.

Bacon inherited the metaphor of the book from the manuscript culture of the Middle Ages, when the book was often

conceived, according to Gellrich, as the suma, " 'totalized' when it refused to allow anything living or even dead to remain unexplained by traditional ideology" (43). It is in part against this forcing of knowledge into traditional schema that Bacon is rebelling, but he seems to retain the notion of a suma of sorts. Bacon sees the scientific project as projecting into a future in which the body of traditional knowledge attending the rhetorical tradition will be enhanced by the collection of data and culminate in a system of axioms that will be generative of all knowledge of the natural world: "For all transitions from experiment to axioms, or from axioms to experiments, belong to that other part, relating to the New Organon" (IX: 72).

The combination of typography and rhetoric paves the way for the objectification of nature and the birth of what Bacon calls the new sciences. In the process traditional rhetoric will be rejected, as it is by Locke and the British empiricists, but ultimately what we call science will depend as a type of discourse upon the concepts of the tropes, figures, topics, and commonplaces of rhetoric as they begin to inhabit a literalized or textual model of the universe. Lanham is describing something like this when he discusses the conflict between rhetorical man and serious man that is central to the Greek vision of the complex self (18-19). The serious man, who is concerned with a certain and identifiable central self, is contrasted with the social self promoted by rhetoric. The central man of the serious tradition begins with Plato and his attack on rhetoric and the

sophists. Plato is also, as Havelock (cf. his Preface to Plato and The Muse Learns to Write) has shown, literate man as opposed to oral man. Literate man sees truth in the stability and certainty of the written word. All of Plato's demurs about the threat of writing aside, he is the literate man par excellence with all of the literate's attachment to the permanence of the word and desire for certainty. Rhetorical man, on the other hand, with his roots in primary oral culture, sees knowledge as social and, therefore, unstable or at least problematic. Thus the many attempts of the Middle ages to reconcile knowledge with tradition: the conflict between the literate's desire for stability and the oral man's drive for the social construction of knowledge. When Bacon says "it is the duty of art to perfect and exalt Nature" (VI: 264), he is speaking as a rhetorician whose duty as a stylist is to perfect and exalt language, particularly as it is used to produce texts.

Many commentators on Bacon have separated science from rhetoric without recognizing their mutual origins in social discourse and the intellectual habits of this discourse. Two recent commentators, Rossi and Stephens, have demonstrated the close relation between Bacon's scientific project and traditional arts, among them rhetoric. The results of this research and much more suggests that Bacon is not attempting to work out the rhetoric of science, but that he is helping to further that combination of rhetoric and textuality that we have come to call science in our print dominated culture.

Bacon's translation of rhetorical arts into experimental arts is a point of mediation between the socially defined world of the orator and the textually defined world of the scientist. The paradigm for the scientific movement involves a combination of the rhetorical agon, man's conversation with nature, and textual schematization, man's discovery and organization of materials into lists, indexes, histories. Bacon harnesses traditional rhetorical techniques to the service of the discovery of new knowledge. In the process he subverts, as Ramus does, the powerful relativity of rhetoric by dismantling it and dividing from the start its function as a guide for the discovery of knowledge from its function as a guide for the performance of knowledge. This is usually explained as part of the natural evolution of the superior arts of logic and dialectic, but this "natural evolution" is an evolution underwritten by the interests of the "sons of science," as Bacon calls them, and other "serious" thinkers like Plato. The alternative history of the sophistic tradition of relativity and social construction has yet to be written and is the true other half of the history of the Western intellectual tradition until recently overshadowed by science.

As our discipline becomes increasingly interested in the social construction of knowledge, we should begin to see more clearly the role print literacy has played in the construction of scientific discourse. That it has grown out of, rather than in opposition to, the rhetorical tradition. We will notice a

striking similarity between the early sophists as they are represented by Kerferd, Enos, and others and the contemporary drift of reader response theory, social construction, and theories of interpretive communities. We are able to see orality literacy contrasts because we are living in an age of increased aural/oral experience and this, as Havelock has recently suggested (The Muse Learns to Write 30-33), has called our attention to the fact that our manner of perceiving the world is largely shaped by the communication technologies we use to understand, embody and compose it. In the works of Francis Bacon, we witness the collision of the residual orality of the Middle ages and Renaissance with the print literacy that was an enabling force behind the scientific revolution. If Bacon's work represents the shift in noetic structures suggested in this brief analysis, it might well serve as a starting point for the study of a third sophistic that begins with the invention of electronic media and grows out of the print culture that has dominated the Western tradition since the seventeenth-century.

Works Cited

- Bacon, Francis. The Works of Francis Bacon, 13 vols. Edited by James Spedding, Robert Ellis, and Douglas Heath. Cambridge: Riverside Press, 1863.
- Chaytor, H. J. From Script to Print: an Introduction to Medieval Vernacular Literature. Cambridge, England: Cambridge University Press, 1945.
- Eisenstein, Elizabeth. The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe, 2 vols. New York: Cambridge University Press, 1979.
- Enos, Richard L. "The Features of Sophistic Composition." A paper presented at the 1986 New Directions in Composition Scholarship conference, University of New Hampshire.
- Gellrich, Jesse M. The Idea of the Book in the Middle Ages: Language Theory, Mythology, and Fiction. Ithaca and London: Cornell University Press, 1985.
- Goody, Jack. The Domestication of the Savage Mind. Cambridge, England: Cambridge University Press, 1977.
- Havelock, Eric A. Preface to Plato. Cambridge, Mass.: Belknap Press of Harvard University Press, 1963.
- , The Muse Learns to Write: Reflections on Orality and Literacy from Antiquity to the Present. New Haven and London: Yale University Press, 1986.
- Kennedy, George. Classical Rhetoric and its Christian and Secular Tradition from Ancient to Modern Times. Chapel Hill: University of North Carolina Press, 1980.
- Kerford, G. B. The Sophistic Movement. Cambridge, England: Cambridge University Press, 1981.
- Lanham, Richard A. The Motives of Eloquence: Literary Rhetoric in the Renaissance. New Haven and London: Yale University Press, 1986.
- Ong, Walter J., S.J. Ramus, Method, and the Decay of Dialogue: From the Art of Discourse to the Art of Reason. Harvard University Press, 1958. Rpt. New York: Octagon Books, 1979.
- , Orality and Literacy: The Technologizing of the Word. New York: Methuen, 1983.

Rossi, Paolo. Francis Bacon: From Magic to Science. Trans. Sacha Rabinovitch. Chicago: University of Chicago Press, 1968.

Stephens, James. Francis Bacon and the Style of Science. Chicago: University of Chicago Press, 1975.